

ATTACHMENT B

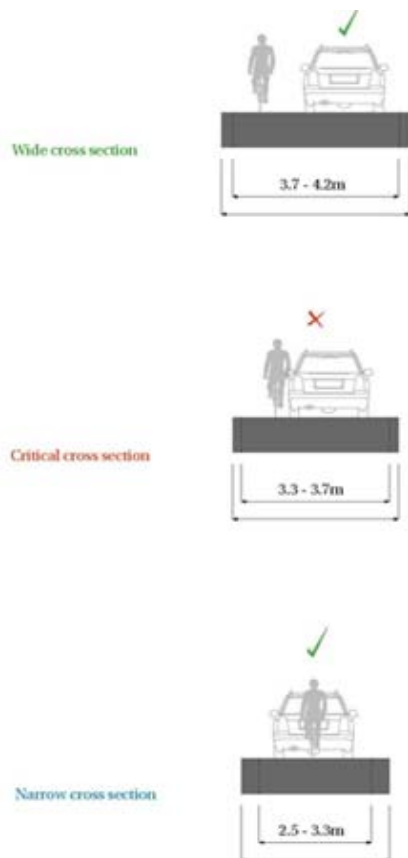
## **ATTACHMENT B**

**ROUTE OPTIONS STUDY**

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## Mixed Traffic Street Criteria and Route Selection

1. Mixed traffic streets are the most common type of facility currently available to bicycle riders. There are a number of considerations that need to be addressed when choosing a safe mixed traffic route.
  - (a) Street Width there are three types of mixed traffic profiles, two are suitable for safe bicycle network routes the third, critical cross sections are not suitable.
    - (i) **Wide cross section roads** provide for comfortable sharing with motor vehicles and bicycles with lanes wide enough to permit comfortable passing.
    - (ii) **Narrow cross section roads** are generally low- speed with low traffic volumes. Where bicycle network routes use this type of street it is desirable for the lane widths to be designed so that it is not possible for cars to pass bicycles, provided that the speed regime is 50km/hr or below.
    - (iii) **Critical cross section roads** lie between a narrow and wide cross section road. On this type of road there isn't enough space to safely share road space but just enough space to squeeze past. Critical road cross sections should be avoided. 'NSW Bicycle Guidelines'
  - (b) The below diagram illustrates the most appropriate positioning of a bicycle rider within the road lane.



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- (c) Safety (risk of conflict with vehicles, difficulty of road crossings, perceived danger, whether a route has good surveillance from neighbouring properties)
- (d) Coherence (link major trip origins and destinations, connectivity, easy to follow)
- (e) Directness (consistency with desire lines, minimal delay points, efficient operating speeds)
- (f) Attractiveness (personal safety, aesthetics, integration and access)
- (g) Comfort (gradients, complicated manoeuvres, sufficient space)
2. A number of routes were investigated using the above measures to determine the safest route for the Broadway Cycle Link, the route options included;
- (a) **Route A** – Shepherd, Daniel, O’Conner, Central Park and Jones Streets.
- (b) **Route B** – Shepherd, Boundary, Buckland, O’Conner, Central Park and Jones Streets.
- (c) **Route C** – Ivy, Boundary, Buckland, O’Conner, Central Park and Jones Streets.
- (d) **Route D** – Shepherd, Myrtle, Meagher, Balfour, Central Park and Jones Streets.
3. A summary of the route options has been tabled below, outlining the opportunities and constraints of each street.

<b>Route A Shepherd, Daniel, O’Conner, Central Park &amp; Jones Street</b>			
<b>Street</b>	<b>Width</b>	<b>Opportunities</b>	<b>Constraints</b>
Shepherd	9.3m	<ul style="list-style-type: none"> <li>Wide and attractive Street</li> </ul>	
Daniels	6.4m		<ul style="list-style-type: none"> <li>Insufficient width</li> </ul>
O’Conner	5.5m		<ul style="list-style-type: none"> <li>Insufficient width</li> <li>2 way traffic operating majority of length</li> <li>‘No Entry’ for northbound cyclists on O’Conner St. Signalised intersection at Abercrombie Street operating as a one way south.</li> <li>High vehicular volumes expected from the Central Park development.</li> </ul>
Central Park		<ul style="list-style-type: none"> <li>Wide plaza and footpath connection provide a safe off road shared path environment</li> </ul>	
Jones	13m	<ul style="list-style-type: none"> <li>Shared Path on a 3m wide southern footpath</li> </ul>	<ul style="list-style-type: none"> <li>Construction vehicles prevent safe on road cycling</li> </ul>

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<b>Route B</b>			
<b>Shepherd, Boundary, Buckland, O'Conner, Central Park &amp; Jones Street</b>			
<b>Street</b>	<b>Width</b>	<b>Opportunities</b>	<b>Constraints</b>
Shepherd	9.3m	<ul style="list-style-type: none"> <li>Wide and attractive Street</li> </ul>	
Boundary	6.4m		<ul style="list-style-type: none"> <li>Insufficient width</li> <li>Footpaths on both sides of the street are narrow, with fewer pedestrians providing passive surveillance</li> <li>Vine St Intersection – garages directly opening onto round about.</li> <li>'No Entry' into Boundary St terminates the route for north bound cyclists.</li> </ul>
Buckland	10.5m	<ul style="list-style-type: none"> <li>Wide and attractive Street</li> </ul>	
O'Conner	5.5m		<ul style="list-style-type: none"> <li>Insufficient width</li> <li>'No Entry' for north bound cyclists on O'Conner St at Abercrombie St.</li> <li>High vehicular volumes expected from the Central Park development.</li> </ul>
Central Park		<ul style="list-style-type: none"> <li>Wide plaza and footpath connection provide a safe off road shared path environment</li> </ul>	
Jones	13m	<ul style="list-style-type: none"> <li>Shared Path on a 3m wide Southern footpath</li> </ul>	<ul style="list-style-type: none"> <li>Construction vehicles prevent safe on road cycling</li> </ul>
<b>Route C</b>			
<b>Ivy, Boundary, Dangar Place, Buckland, O'Conner, Central Park and Jones Street</b>			
<b>Street</b>	<b>Width</b>	<b>Opportunities</b>	<b>Constraints</b>
Ivy	10m		<ul style="list-style-type: none"> <li>One-way south bound section of Ivy Street between Wilson and Abercrombie Street- contra flow lane required north-bound</li> </ul>
Boundary	6.4m		<ul style="list-style-type: none"> <li>Vine St intersection – garages directly opening onto round about.</li> <li>'No Entry' into Boundary St from Abercrombie Street, terminates the route for north bound cyclists.</li> <li>Footpaths on both sides of the street are narrow, with fewer pedestrians providing passive surveillance.</li> </ul>
Dangar Place	8.7m	<ul style="list-style-type: none"> <li>Pedestrian easement</li> </ul>	<ul style="list-style-type: none"> <li>Reduced passive surveillance</li> <li>Uneven surface</li> </ul>
Buckland	10.5	<ul style="list-style-type: none"> <li>Wide and attractive Street</li> </ul>	
O'Conner	6.0m		<ul style="list-style-type: none"> <li>In sufficient width</li> <li>'No Entry' for north bound cyclists on O'Conner St at Abercrombie St.</li> <li>High vehicular volumes expected from the Central Park development.</li> </ul>
Central Park		<ul style="list-style-type: none"> <li>Wide plaza and footpath connection provide a safe off road shared path environment</li> </ul>	
Jones	20m	<ul style="list-style-type: none"> <li>Broadway to Thomas Street - Shared Path on a 3m wide Southern footpath</li> <li>Thomas to Mary Anne St – road closure</li> </ul>	<ul style="list-style-type: none"> <li>Construction vehicles prevent safe on road cycling</li> </ul>

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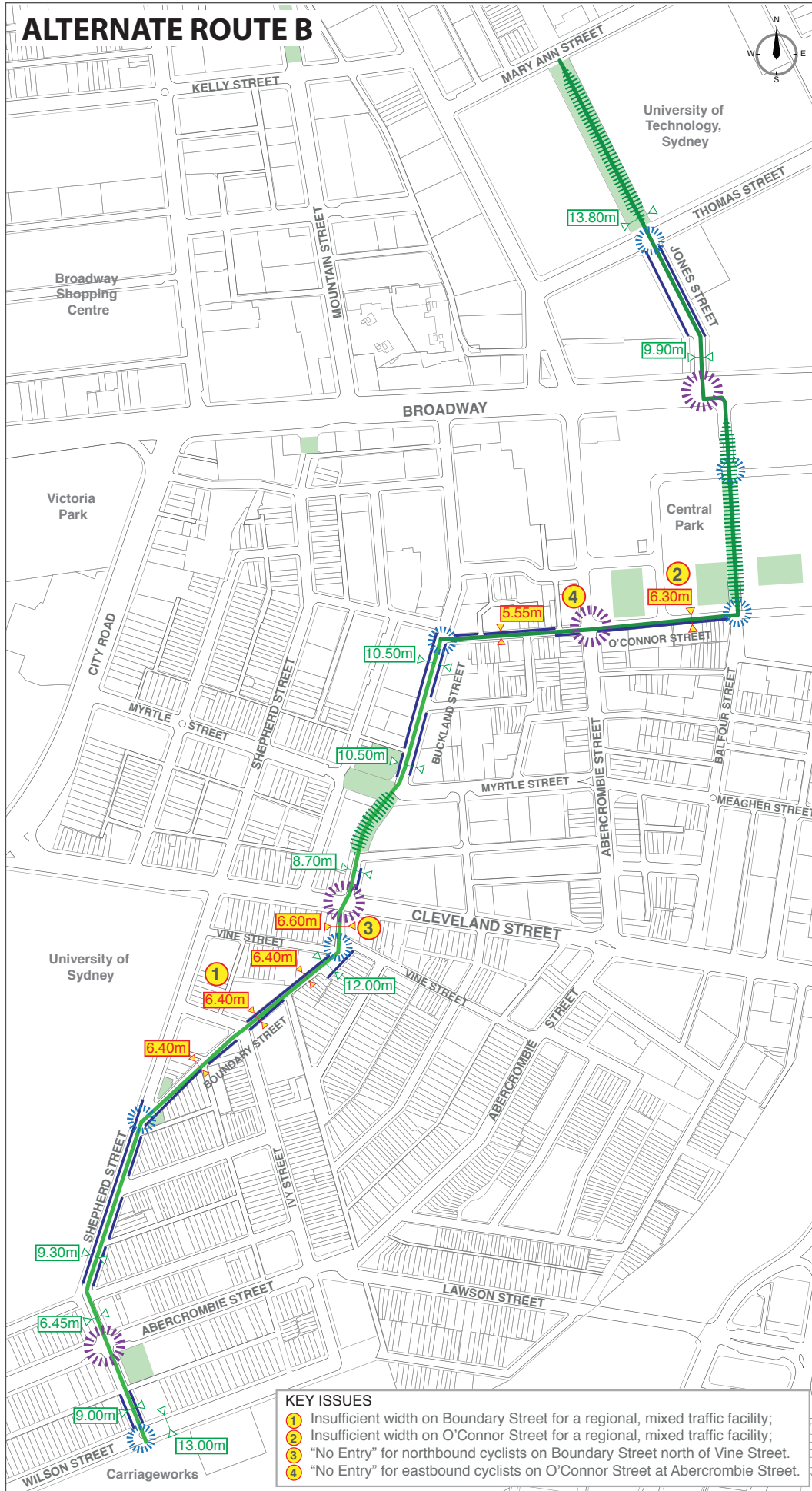
<b>Route D Shepherd, Myrtle, Peace Park, Meagher, Balfour, Central Park &amp; Jones Street</b>			
<b>Street</b>	<b>Width</b>	<b>Opportunities</b>	<b>Constraints</b>
Shepherd	9.3m	<ul style="list-style-type: none"> <li>Wide and attractive Street</li> </ul>	<ul style="list-style-type: none"> <li>Constraints for pedestrians, no pedestrian crossing points on the north and east legs of the Cleveland and Shepherd Street intersection.</li> </ul>
Myrtle	11.2-13m	<ul style="list-style-type: none"> <li>Wide and attractive Street</li> </ul>	<ul style="list-style-type: none"> <li>No crossing at the intersection of Abercrombie Street</li> </ul>
Peace Park		<ul style="list-style-type: none"> <li>Safe off road environment for cyclists</li> </ul>	<ul style="list-style-type: none"> <li>Potential perceived conflict with pedestrians</li> </ul>
Meagher	11.0m	<ul style="list-style-type: none"> <li>Wide and attractive Street</li> </ul>	
Balfour	8.8m	<ul style="list-style-type: none"> <li>Attractive Street</li> </ul>	
Central Park		<ul style="list-style-type: none"> <li>Wide plaza and footpath connection provide a safe off road shared path environment</li> </ul>	
Jones	20m	<ul style="list-style-type: none"> <li>Broadway to Thomas Street - Shared Path on 3m wide southern footpath</li> <li>Thomas to Mary Anne St – safe connection through road closure</li> </ul>	<ul style="list-style-type: none"> <li>Construction vehicles prevent safe on road cycling</li> </ul>

## Route Summary

4. The results of the route analysis indicate that the following;
- Route A - Shepherd Street provides a wide attractive route for cyclists until it reaches Daniel Street. Daniel and O'Conner Streets have insufficient width to accommodate a safe, regional mixed traffic route. A one way street south bound on O'Conner Street and 'no entry' at Abercrombie Street terminates the route for north bound cyclists.
  - Route B - Shepherd Street provides a wide attractive route for cyclists until it reaches Boundary Street. Boundary St provides insufficient width for a mixed traffic street, with little passive surveillance. 'No Entry' into Boundary St from Abercrombie Street intersection, terminates the route for north bound cyclists.
  - Route C - Ivy Street is a one way lane from Wilson to Abercrombie Street, a contra flow lane is required for north bound cyclists. Boundary St provides insufficient width for a mixed traffic street, with little passive surveillance. 'No Entry' into Boundary St from Abercrombie Street intersection terminates the route for north bound cyclists. O'Conner Street connection has insufficient width to accommodate a safe, regional mixed traffic, a one way street south bound and 'no entry' at Abercrombie Street terminates the route for north bound cyclists.
  - Route D - all streets along the route provide a width that is suitable as a safe mixed traffic street, providing a route that is attractive, coherent, and comfortable. Three issues along the route that would need to be addressed include the inclusion of 2 additional pedestrian crossings at the intersection of Shepherd and Cleveland Streets, separation of bicycle riders and park users within Peace Park and additional traffic lights at the corner of Abercrombie/ Myrtle Meagher Street.



# ALTERNATE ROUTE B



 Width of road is acceptable for a mixed traffic facility

 Width of road is too narrow for a mixed traffic facility

 Approximate car parking

**1660m**  
Approximate travel distance

**25**  
Intersections along the route

**4**  
Stops

**7**  
Give Way

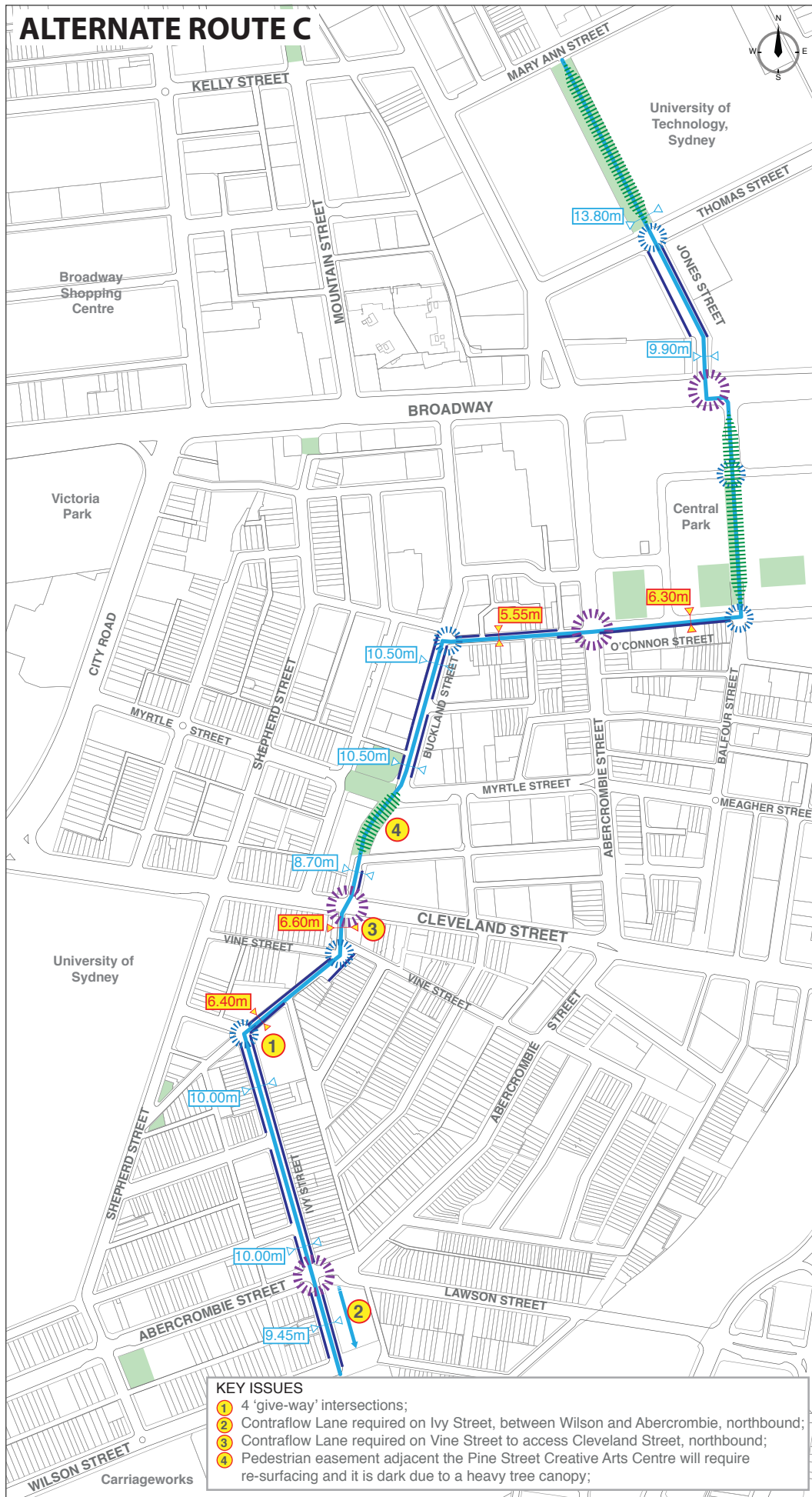
**3**  
Slow zone

### KEY ISSUES

- 1 Insufficient width on Boundary Street for a regional, mixed traffic facility;
- 2 Insufficient width on O'Connor Street for a regional, mixed traffic facility;
- 3 "No Entry" for northbound cyclists on Boundary Street north of Vine Street.
- 4 "No Entry" for eastbound cyclists on O'Connor Street at Abercrombie Street.

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# ALTERNATE ROUTE C



 Width of road is acceptable for a mixed traffic facility

 Width of road is too narrow for a mixed traffic facility

 Approximate car parking

**1510m**  
Approximate travel distance

**22**  
Intersections along the route

**4**  
Stops

**6**  
Give Way

**3**  
Slow zone

### KEY ISSUES

- 1 4 'give-way' intersections;
- 2 Contraflow Lane required on Ivy Street, between Wilson and Abercrombie, northbound;
- 3 Contraflow Lane required on Vine Street to access Cleveland Street, northbound;
- 4 Pedestrian easement adjacent the Pine Street Creative Arts Centre will require re-surfacing and it is dark due to a heavy tree canopy;

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# ALTERNATE ROUTE D



 Width of road is acceptable for a mixed traffic facility

 Width of road is too narrow for a mixed traffic facility

 Approximate car parking

**1740m**  
Approximate travel distance

**32**  
Intersections along the route

**3**   
Stops

**7**   
Give Way

**3**   
Slow zone

### KEY ISSUES

- 1 Myrtle Street, Meagher Street intersection with Abercrombie Street is not signalised. As Abercrombie Street is a major arterial road signalisation is required to provide safe crossing point.

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